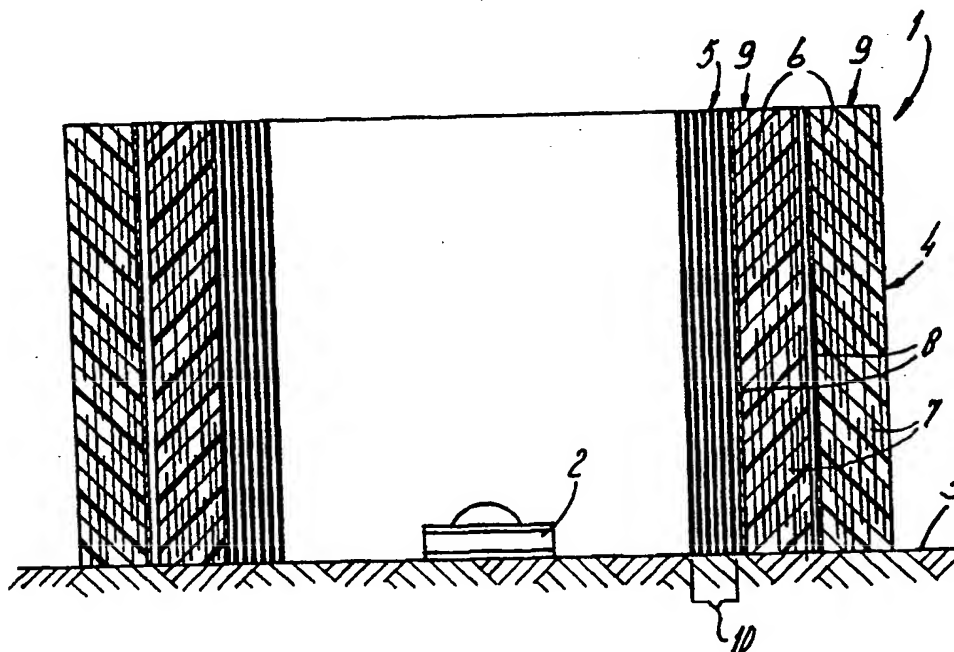


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(21) International Application Number: PCT/NL98/00184 (22) International Filing Date: 2 April 1998 (02.04.98) (30) Priority Data: 1005707 2 April 1997 (02.04.97) NL (71) Applicant (for all designated States except US): FOKKER SPECIAL PRODUCTS B.V. [NL/NL]; Postbus 59, NL-7900 AB Hoozeveen (NL). (72) Inventor; and (75) Inventor/Applicant (for US only): VAN MULLEN, Jacques [NL/NL]; Het Anker 89, NL-7908 GM Hoozeveen (NL). (74) Agent: DE BRUIJN, Leendert, C.; Nederlandsch Octrooibureau, Scheveningsweg 82, P.O. Box 29720, NL-2502 LS The Hague (NL).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> <i>In English translation (filed in Dutch).</i>

(54) Title: **SCREENING DEVICE FOR EXPLOSIVES**

(57) Abstract

A screening device for screening an explosive, such as a mine, comprises a case-like body which can be placed around the explosive, in such a manner that the parts produced when it explodes collide with the inner wall of the case-like body and are consequently prevented from spreading. The case-like body comprises an inner shell for counteracting fragmentation, and an outer shell for absorbing the energy released in the event of an explosion, which inner shell and outer shell fit separately inside one another. The dismantled inner shell and outer shell can be flattened and/or folded up.

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Screening device for explosives

The invention relates to a screening device for screening an explosive, such as a mine, comprising a case-like body which can be placed around the explosive, in such a manner that the parts produced when it explodes collide with the inner wall of the case-like body and are consequently prevented from spreading.

A screening device of this kind is known. It comprises a case or cone of impregnated fibrous material. This known screening device offers a certain degree of protection against explosives which, for whatever reason, cannot be dismantled.

Despite the effective action of the known screening device, its practical introduction has nevertheless been found to present problems. It is necessary for a considerable number of screening devices of this kind to be kept in readiness at the location to be protected. In view of the fact that the screening devices take up a relatively large amount of space, owing to their tubular shape, a large storage area has to be reserved for them. These factors make protection of this kind so expensive and impractical that it has been difficult to introduce.

The object of the invention is therefore to provide a screening device which causes fewer problems with regard to keeping it in a state of readiness. This object is achieved by the fact that the case-like body has an inner shell for counteracting fragmentation, and an outer shell for absorbing the energy released in the event of an explosion, which inner shell and outer shell fit separately inside one another.

Due to the fact that the inner shell and the outer shell are not adhesively bonded to one another and therefore remain separate from one another, the case is not rigid, but rather the separate shells can be handled and stored more easily. In this case, these shells may be so flexible that they take up considerably less room during storage.

On the other hand, there is no impairment to the rapid deployability of the screening device. The inner shell merely has to be pushed into the outer shell, after which the screening device is ready for use.

The inner and outer shells may be designed in various ways. According to a preferred embodiment, the inner shell comprises at least one plastic plate, which is held in a curved shape by the outer shell. The advantage of an embodiment of this kind is that in particular plates of this nature take up scarcely any room during storage. Nevertheless, they can quickly produce a curved inner shell which can be pressed under

its own preloading against the outer shell.

Depending on the level of threat from the explosive in question, more or fewer plastic plates of this kind can be placed inside one another within the outer shell. The material of the plates may, for example, be acrylate or polycarbonate.

5 Plates made from a material of this nature are suitable for making the fragments released during an explosion harmless by flattening or filling up sharp points on the fragments or rounding off the fragment itself, in such a manner that the surface area of the fragment in the direction of the outer shell is increased and the cutting action of the fragments is reduced.

10 Preferably, the outer shell comprises at least one flexible sleeve made from fibrous material. The bundle of fibres used in this case consists of fibres with a high energy-absorbing capacity, such as aramid, polyethylene, glass or nylon. The fibrous material is not provided with a matrix, which means that the sleeve can easily be folded flat.

15 For this reason, the sleeves also take up scarcely any room during storage. In order to employ the plates, they can be moved into an open position, after which they are held firmly in the open position under the preloading of the plates.

 The number of sleeves accommodated inside one another can also be adapted to the threat posed by the explosive. In order to protect the bundle of fibres against
20 external influences, the unit can be wrapped in a plastic sheet. Preferably, an aluminium foil can be arranged on the inside of the sleeve, in order to increase the stability of a sleeve.

 In addition to varying the number of plates and sleeves, consideration may also be given to varying the diameter and height of the shells.

25 Finally, it is possible to conceive of a variant in which the case-like body can be folded up in its entirety.

 The invention will be explained in more detail below with reference to an exemplary embodiment illustrated in the figures, in which:

30 Figure 1 shows the screening device according to the invention in the deployed state.

 Figure 2 shows the separate components for screening devices of this kind.

 The screening device 1 depicted in Figure 1 is placed around a landmine 2, on the ground 3. This screening device comprises an outer shell 4 and an inner shell 5, which are held in a close-fitting manner one inside the other. The outer shell 4
35 comprises a number of sleeves 6 made from wound fibrous material, for example from

aramid fibres, polyethylene fibres, etc. A layer of aluminium foil 8 is accommodated on the inside of the sleeves 6. Together with the sleeves 6, this layer of aluminium foil 8 is packaged inside a packaging sheet 9.

5 The assembly comprising sleeves 6, aluminium foil 8 and packaging sheet 9 is flexible and can be folded flat, as illustrated in Figure 2. On the other hand, the aluminium foil 8 in particular provides the outer shell 4 with a sufficient rigidity to enable it to be placed in the open state without falling over.

10 The inner shell 5 comprises a number of curved plates 10, which in the starting position have a flat form, as also illustrated in Figure 2. These plates may consist of a material which has good resistance to fragmentation, such as polycarbonate, acrylate and the like.

However, plates 10 are sufficiently flexible to be able to be moved into a curved shape and then placed within the erected outer shell 1. In this position, one or more curved plates of this kind form the inner shell 5, as illustrated in Figure 1.

Claims

1. Screening device for screening an explosive, such as a mine (2), comprising a case-like body (1) which can be placed around the explosive, in such a manner that the parts produced when it explodes collide with the inner wall of the case-like body and are consequently prevented from spreading, characterized in that the case-like body comprises an inner shell (5) for counteracting fragmentation, and an outer shell (4) for absorbing the energy released in the event of an explosion, which inner shell (5) and outer shell (4) fit separately inside one another.
2. Screening device according to Claim 1, in which the inner shell (5) comprises at least one plastic plate (10), which is held in a curved shape by the outer shell (4).
3. Screening device according to Claim 2, in which the material of each plastic plate (10) is acrylate or polycarbonate.
4. Screening device according to Claim 2 or 3, in which the outer shell (4) comprises at least one flexible sleeve (6) made from fibrous material.
5. Screening device according to Claim 4, in which each sleeve comprises a plurality of windings of a web of fibrous material.
6. Screening device according to Claim 4 or 5, in which an aluminium foil (8) is situated on the inside of the sleeve (6).
7. Screening device according to Claim 4 or 5, in which each sleeve (6) and, if appropriate, the aluminium foil (8) is held in a plastic sheet (9).
8. Screening device according to Claim 5, 6 or 7, in which the fibrous material comprises aramid, polyethylene, glass or nylon.
9. Screening device according to one of the preceding claims, in which the outer shell (4) can be folded up.
10. Set for a screening device according to one of Claims 2-7, comprising at least one plastic plate (10) and at least one sleeve (6) made of flexible material, the width dimension of the plastic plate (10) being approximately equal to the axial dimension of each sleeve (6), and the length dimension of the plastic plate (10) being at least equal to the dimension of the internal circumferential measurement of the innermost sleeve (6).
11. Screening device for screening an explosive, such as a mine (2), comprising a case-like body (1) which can be placed around the explosive, in such a manner that the parts produced when it explodes collide with the inner wall of the case-like body and are

consequently prevented from spreading, characterized in that the case-like body can be folded up.

12. Screening device according to Claim 11, in which the case-like body comprises an inner shell (5) for counteracting fragmentation, and an outer shell (4) for
5 absorbing the energy released in the event of an explosion.

1/1

fig - 1

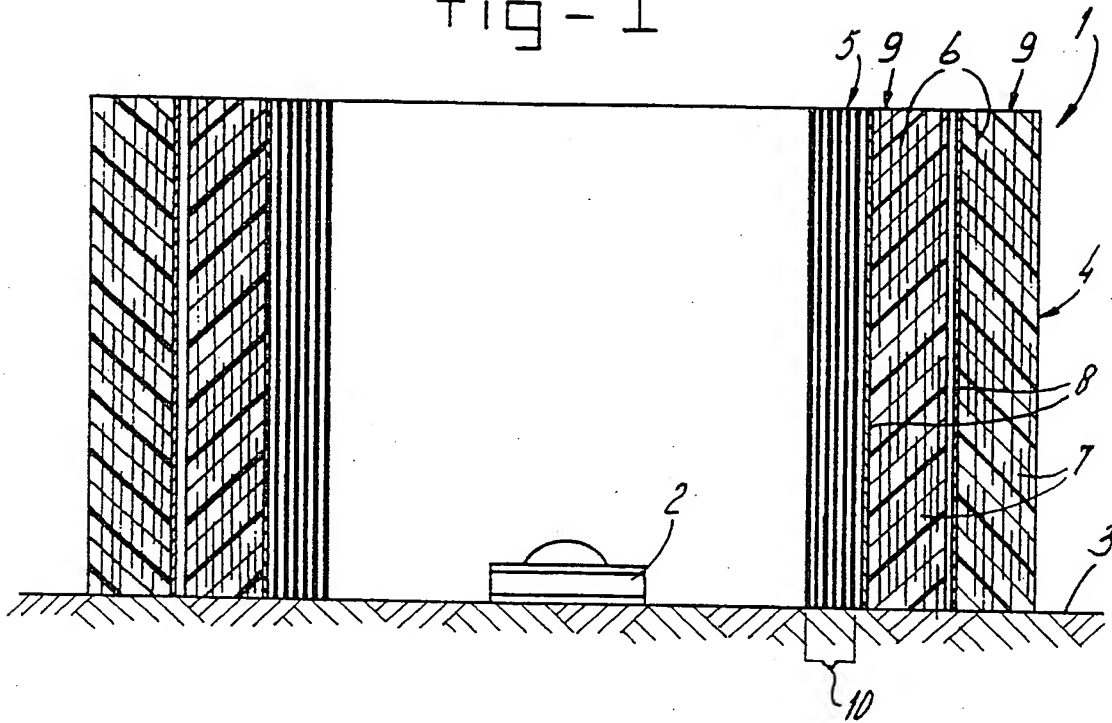
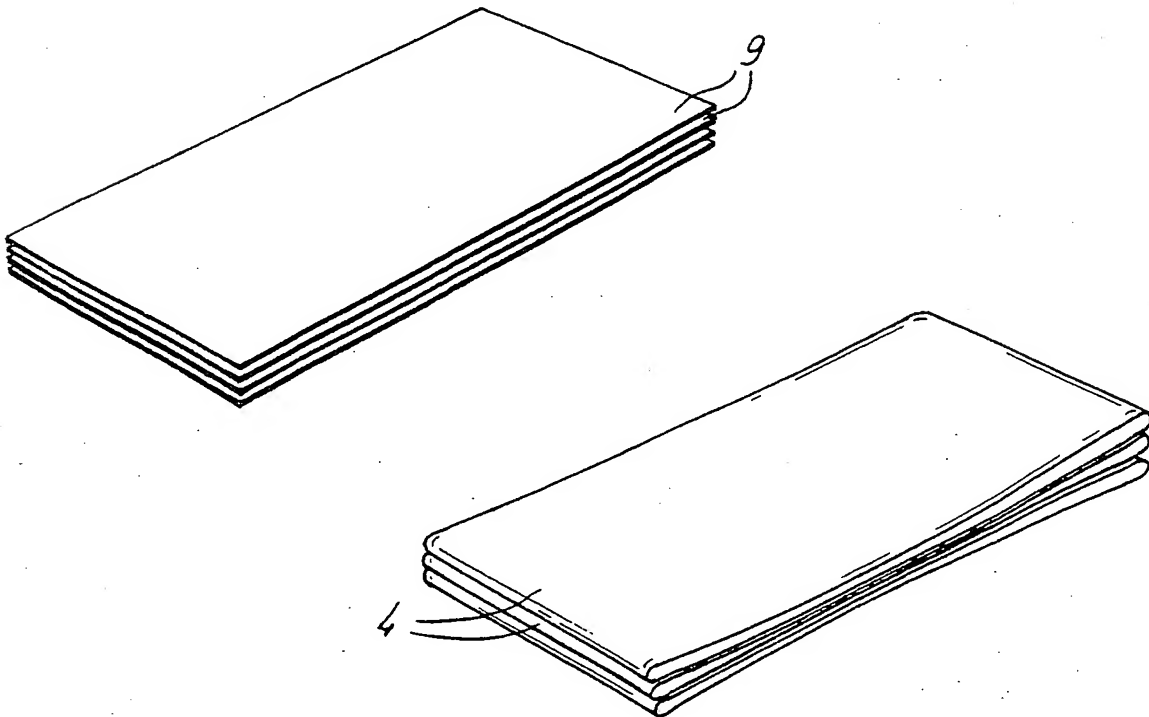


fig - 2



INTERNATIONAL SEARCH REPORT

International Application No

PCT/NL 98/00184

A. CLASSIFICATION OF SUBJECT MATTER

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B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 F42D F41H F42B F41J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 93 08361 A (FIREXX CO) 29 April 1993 see page 4, line 23 - page 11, line 24; figures	1, 10, 11
A	GB 2 242 619 A (DOWTY ARMOURSHIELD LTD) 9 October 1991 see page 5, line 1 - page 8, line 18; figures	1, 10, 11
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Information on patent family members

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